REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow. After amending the claims as set forth above, claims 1-5 and 10-23 are now pending in this application.

Applicants wish to thank the Examiner for the careful consideration given to the claims.

Rejection of claims 1, 5, and 10-15 based on Weber

Rejection of claims 1, 5, and 10-15 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,468,143 ("Weber"). For at least the following reasons, this rejection is traversed.

Claim 1 (as amended) recites, among other things, a gas burner comprising a metal burner membrane. The membrane comprises a base section having a smallest radius of curvature being R_{base}, a closing section, and a transition region connecting the base section to the closing section. The membrane is uninterrupted, and the transition region has a smallest radius of curvature $r_{transition}$ being larger than zero and being smaller than the R_{base}. Weber does not teach or suggest this combination of features.

For instance, Weber does not teach or suggest a gas burner. Weber discloses an infrared heater. (Column 1, lines 19-24 and column 2, lines 19-46 of Weber.) Such infrared burners are used in construction applications and brooders. (Column 1, lines 6-8 of Weber.) They emit infrared radiation by the heating of the temperature-resistant radiating elements such wire fabric or mesh, perforated plates, perforated thermal bodies or the like. In essence, the combustion process takes place inside the radiating elements and no flame is visible, that is, the gas burns before exiting the radiating elements. The term "gas burner" of claim 1 is a term of art known to one of ordinary skill in the art to be different from "infrared heater." Gas burners differ from infrared heaters in that they have a "flame front," that is, there is no confined burning but the flames are visible and the gas penetrates the membrane before being ignited. (Page 3, lines 12-27 and Fig. 3b of the present specification.) One of ordinary skill in the art would not consider an infrared heater to be a gas burner. Indeed, one excludes the other: the use of a gas burner in a brooder as described in Weber will not have the desired results and the use of an infrared heater cannot result in a large dynamic range as can be

achieved with the invention of claim 1. Because Weber does not teach or suggest a gas burner, claim 1 is allowable over Weber.

Also, Weber does not teach or suggest a burner comprising "a metal burner membrane." Weber discloses defines "a glow element 1 in the form of a heat-resistant metal shell provided internally with a gas permeable body." (Column 4, lines 7-12 of Weber.) The term "metal burner membrane" of claim 1 is a term of art known to one of ordinary skill in the art to be different from the metal shell of Weber. The metal shell of Weber cannot be considered the burner membrane of claim 1 because no combustion takes place outside the metal shell, only inside the gas permeable body. The metal shell of Weber may have a grid structure but it is merely intended for the discharging of the combustion gases. (Column 4, lines 14-18 of Weber.) Because Weber does not teach or suggest a metal burner membrane, claim 1 is allowable over Weber.

Furthermore, Weber does not teach or suggest that the membrane of the gas burner comprises a base section having a smallest radius of curvature being R_{base}. It appears that the PTO is asserting that Fig. 2 of Weber discloses a base section with a certain radius of curvature. (Page 2 of the Office Action.) It is unclear as to what the PTO is considering to be the base section. One interpretation might be that the PTO is considering the element 3 in Fig. 2 to be the base section. However, such an interpretation is improper because Weber teaches that element 3 is an air duct in which "[t]he duct forms the upper wall of the base of the trough which is of semicircular cross section." (Column 4, lines 54-59 of Weber.) Another interpretation might be that the PTO is considering the infinitesimally small connecting line between the duct 3 and the semicircular cross section to be the base section. However, this interpretation is improper because the application is clear how the smallest radius of curvature must be determined (page 2, lines 11-33 of the specification) and at least a normal N to the surface must be definable. A line contact does not allow for the determination of a normal N to the surface of the line contact. Because, Figs. 2 and 2a of Weber does not teach or suggest a base section having a smallest radius of curvature being R_{base}, claim 1 is allowable over Weber.

Furthermore, Weber does not teach or suggest that the transition region has a smallest radius of curvature $r_{transition}$ being larger than zero and <u>being smaller than said R_{base}</u>. Weber

does not teach or suggest this feature. Because Weber does not teach this feature, claim 1 is allowable over the prior art.

Claims 5 and 10-15 depend from and contain all the features of claim 1, and are allowable for the same reasons as claim 1, without regard to the further patentable features contained therein. However, it is clear that Weber does not teach or suggest all the features of these dependent claims. For instance, in regard to claim 10, Fig. 9a of Weber only shows a base section not a transition region, and hence does not teach or suggest all the features of claim 1 and its dependent claim 10. In regard to claim 11, the shape of the glow element 1 shown in Fig. 2a (which the PTO asserts teaches all the features of claim 11) is a semicylindrical shape, not a cylinder. In regard to claim 12, the shape of the glow element 1 in Fig. 4a (which the PTO asserts teaches all the features of claim 12) does not show a delimitation by parallel planes perpendicular to the axis of the torus. In regard to claim 14, the shape of the glow element 1 shown in Fig. 4 (which the PTO asserts teaches all the features of claim 14) is semicircular, not rectangular. In regard to claim 15, the shape of the glow element 1 shown in Fig. 9a (which the PTO asserts teaches all the features of claim 15) is conical, not pyramidal. The PTO asserts that "a pyramid with rounded edges could also be interpreted as a cone." (Pages 2-3 of the Office Action.) However, such an interpretation is unreasonable because one with ordinary skill in the art would interpret "pyramid" as a polyhedron having for its base a polygon and for faces triangles with a common vertex in which a polygon is known to be a closed plane figure bounded by straight lines. To interpret a cone as a pyramid would effectively removed the two elements needed that define a pyramid, i.e., a polygonal base and triangular faces meeting at a point. Accordingly, one with ordinary skill in the art would not interpret the cone of Fig. 9a as being pyramidal.

For at least these reasons, favorable reconsideration of the rejection is respectfully requested.

Rejection of claims 2-4 and 6-9 based on Weber and Dewaegheneire

Claims 2-4 and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weber in view of U.S. Patent 6,065,963 ("Dewaegheneire"). This rejection is traversed for at least the following reasons.

Claims 2-4 depend from and contain all the features of claim 1. As previously mentioned, Weber does not teach or suggest a gas burner, a metal burner membrane, a base section having a smallest radius of curvature being R_{base}, and that the transition region has a smallest radius of curvature $r_{transition}$ being larger than zero and being smaller than said R_{base}. Dewaegheneire does not cure all these deficiencies. Thus, claim 1 is allowable.

Also, Dewaegheneire merely discloses a burner membrane comprising a net on which a metal fabric of heat resistant stainless steel fibers is disposed. However, one with ordinary skill in the art would not have a reason to apply the burner member of Dewaegheneire to the infrared heater of Weber because they operate on different principles and incorporating one into the other is tantamount to changing the operation of the device of Weber, which makes the proposed modification improper, according to MPEP 2143.01.[1] Thus, the combination of Weber and Dewaegheneire is improper.

Furthermore, the shape of the burner membranes disclosed by Dewaegheneire are limited to conically shaped surfaces possibly truncated with an end-cap (See Fig. 2 and column 1, lines 55-57 of Dewaegheneire.) The problem Dewaegheneire solves is the problem of the occurrence of a flaring flame at the end of prismatic or cylindrical burners, due to the built-up of a gas pressure at the end of the tube. The difference between the invention of claim 1 and Dewaegheneire is that the burner surface shows an uninterrupted burner membrane with a base section and a closing section and that the smallest radius of curvature is larger than zero but smaller than the smallest radius of curvature of the base section. The effect of this difference is that the speed of the gas flow is advantageously modulated over the surface of the burner membrane. (Page 3, lines 12-27 of the specification.) Such a modulation allows for a wide dynamic range of the burner membrane (Page 8, lines 4-23 of the specification.)

According to the specification, the problem that one of ordinary skill in the art is confronted with is to find a single burner surface that allows a wide dynamic range without having to adjust the dimensions of the burner. (Page 1, lines 9-22 of the specification.) Confronted with this problem and knowing Dewaegheneire, one with ordinary skill in the art

[1] "If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)."

would never turn to Weber, because Weber concerns gas-fueled infrared heaters and not gas burners. Such gas-fueled infrared heaters do not allow for a large dynamic range, but are designed to operate under steady conditions at a fixed power rating. For example, when brooding eggs, the heating power must remain stable for at least 21 days. The different shapes described by Weber are introduced for finding a balance between the heating of the surface and heating of the filter in the air duct, and is not for increasing their dynamic range. Hence the applicability between Dewaegheneire and Weber is not straightforward, and the proposed combination is improper. Therefore, the combination of Weber and Dewaegheneire does not teach or suggest all the features of claim 1 and such a combination is improper.

For at least these reasons, claims 1 and its dependent claims 2-4 are allowable of Weber and Dewaegheneire.

Claims 6-9 have been canceled, which renders the rejection of these claims moot.

For at least these reasons, favorable reconsideration of the rejection is respectfully requested.

Allowability of claims 16-23

Claims 16-23 depend from and contain all the features of claim 1. As previously mentioned, the combination of Weber and Dewaegheneire does not teach or suggest all the features of claim 1 and such a combination is improper. Therefore, claims 16-23 are allowable for the same reasons as claim 1, without regard to the further patentable features contained therein. For at least this reason, allowance of claims 16-23 is respectfully requested.

Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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By

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5426
Facsimile: (202) 672-5399

Glenn Law
Registration No. 34,371

Matthew J. Kremer
Registration No. 58,671